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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/530,629	06/19/2000	MICHAEL DADD	SHP-PT058	1975

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EXAMINER

PEREZ, GUILLERMO

ART UNIT PAPER NUMBER

2834

DATE MAILED: 07/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/530,629

Applicant(s)

DADD, MICHAEL

Examiner

Guillermo Perez

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-11 and 13-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-11 and 13-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 22.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 24, 2002 has been entered.

Claim Objections

Claim 12 is objected to because of the following informalities: on line 5 "the magnetic assembly" should be replaced by ---the magnetic field generator assembly--- to maintain the consistency and clarity of the terminology being used. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4, 10-11, 15, 17-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "the rotor" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites the limitation "the magnetic circuit member" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 11 recites the limitation "the magnetic circuit member" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 15 recites the limitation "the rotor" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 17 recites the limitation "the magnetic circuit" in the second to last line. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-4, 6, 9, 16-19, 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Kling (U. S. Pat. 4,126,797).

Referring to claim 1, Kling discloses an electromechanical transducer (figures 5b and 25) comprising:

a stator (20') having a plurality of coils (a-d); and

a magnetic assembly (21) having a plurality of magnetic poles (D), there being flux linkage between the coils (a-d) and the magnetic poles (D) which results in a magnetic circuit; wherein

the stator (20') and the magnetic assembly (21) are arranged for relative linear movement and both the plurality of coils (a-d) and the plurality of magnetic poles (D) are arranged to describe a helical path about the axis of the transducer such that the magnetic circuit includes a helical component (compare figure 5b with figure 25) which induces either a force as a result of changes in the flux linkage or changes in the flux linkage as a result of the relative linear movement.

Referring to claims 2 and 18, Kling discloses that the stator (20') includes a plurality of core elements on which the plurality of coils are mounted and associated pole pieces.

Referring to claim 3, Kling discloses a magnetic circuit member (figure 23) provided on the side of the magnetic assembly opposite to the side of the magnetic assembly facing the stator (a-h).

Referring to claim 4, Kling discloses that the magnetic circuit member is integral with the rotor and moves as part of the rotor (figure 23).

Referring to claims 6 and 19, Kling discloses (in figure 25) that the angle of the helical path of the plurality of coils (a-d) is different to the angle of the plurality of magnetic poles (D) of the magnetic assembly (21).

Referring to claims 9 and 21, Kling discloses that two transducers of opposite handedness are coupled thereby constraining rotational movement of the magnetic assemblies relative to the stator (figure 20 and column 13, lines 8-23).

Referring to claim 16, Kling discloses a compressor having an electromechanical transducer as claimed in claim 1, connected to a piston and cylinder arrangement (column 20, lines 30-50).

Referring to claim 17, Kling discloses an electromechanical transducer comprising:

- a stator (20') having a plurality of coils (a-d);
- a magnetic field generator assembly (21) having a plurality of magnetic poles (D) there being flux linkage between the coils (a-d) and the magnetic poles (D);

- the stator (20') and the magnetic assembly (21) arranged for relative linear movement; and

- both the plurality of coils (a-d) and the plurality of magnetic poles (D) arranged to describe a helical path about the axis of the transducer such that both helical paths have a common general angular orientation relative to the axis whereby the magnetic circuit includes a helical component (compare figure 5b with figure 25).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 10 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kling in view of Beale et al. (U. S. Pat. 5,525,845).

Kling substantially teaches the claimed invention except that it does not show that at least one of the plurality of core elements and the associated pole pieces of the stator, the magnetic circuit member, and intervening segments interposed between the magnetic poles of the rotor consists of high permeability material. Kling does not disclose that the rotor does not form a closed cylinder.

Beale et al. disclose that at least one of the plurality of core elements and the associated pole pieces of the stator, the magnetic circuit member, and intervening segments interposed between the magnetic poles of the rotor consists of high permeability material (column 7, lines 9-11). Beale et al. disclose that the rotor (132) does not form a closed cylinder. The invention of Beale et al. has the purpose of producing the reciprocating motion of the rotor.

It would have been obvious at the time the invention was made to modify the electromechanical transducer of Kling and provide it with the material and rotor configuration disclosed by Beale et al. for the purpose of producing the reciprocating motion of the rotor.

3. Claims 7-8 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kling in view of Davey et al. (EP 0028144A1).

Kling discloses an electromechanical transducer as described on item 1 above. However, Kling does not disclose that holding means are additionally provided to

constrain at least rotational relative movement between the magnetic assembly and the stator. Kling does not disclose that the holding means is in the form of one or more spiral springs.

Davey et al. disclose that holding means (31) are additionally provided to constrain at least rotational relative movement between the magnetic assembly (16) and the stator (13). Davey et al. disclose that the holding means (31) is in the form of one or more spiral springs (31). The invention of Davey et al. has the purpose of creating axial flexibility and distributing stresses equally.

It would have been obvious at the time the invention was made to modify the electromechanical transducer of Kling and provide it with the holding means disclosed by Davey et al. for the purpose of creating axial flexibility and distributing stresses equally.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kling in view of Foggia et al. (EP 267,845).

Kling discloses an electromechanical transducer as described on item 1 above. However, Kling does not disclose that the planes of the individual laminations describe a helical path about the axis of the transducer.

Foggia et al. disclose that at least one of the stator, the magnetic assembly and the magnetic circuit member consists of a plurality of laminations stacked together and the planes of the individual laminations describe a helical path about the axis of the transducer (see figure 2). The invention of Foggia et al. has the purpose of producing translation movement with respect to the stator.

It would have been obvious at the time the invention was made to modify the electromechanical transducer of Kling and provide it with the stator configuration disclosed by Foggia et al. for the purpose of producing translation movement with respect to the stator.

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kling in view of Cook et al. (U. S. Pat. No. 5,719,451).

Kling discloses an electromechanical transducer as described on item 1 above. However, Kling does not disclose that the magnetic assembly consists of a single component having isotropic magnetization characteristics whereby the magnetic assembly has a non-binary magnetic field distribution.

Cook et al. disclose that the magnetic assembly (25) consists of a single component having isotropic magnetization characteristics whereby the magnetic assembly (25) has a non-binary magnetic field distribution (column 5, lines 12-22). Cook et al. has the purpose of providing opposed magnetic poles at portions of the cylindrical faces at opposite ends of the cylinder.

It would have been obvious at the time the invention was made to modify the electromechanical transducer of Kling and provide it with the isotropic magnetization characteristics disclosed by Cook et al. for the purpose of providing opposed magnetic poles at portions of the cylindrical faces at opposite ends of the cylinder.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kling in view of Delson et al. (U. S. Pat. No. 6,002,184).

Kling discloses an electromechanical transducer as described on item 1 above. However, Kling does not disclose a torque transducer for measuring the axial force generated by the electromechanical transducer.

Delson et al. disclose a torque transducer (129) for the purpose of measuring the axial force generated by the electromechanical transducer.

It would have been obvious at the time the invention was made to modify the electromechanical transducer of Kling and provide it with a torque transducer as disclosed by Delson et al. for the purpose of measuring the axial force generated by the electromechanical transducer.

Response to Arguments

Applicant's arguments with respect to claims 1-4, 6-11, and 13-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Perez whose telephone number is (703) 306-5443. The examiner can normally be reached on Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308 1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703)


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305 3432 for regular communications and (703) 305 3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

Guillermo Perez
July 25, 2002



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